

LA-UR-21-23263

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Title: 20210407_Aerospace Industry Trends

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Intended for: Web Cast: Trends in Military/Aerospace Design

Issued: 2021-04-06

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Aerospace Industry Trends

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7 April 2021

Motivation and Observation

1. Motivation: A window of opportunity exists to influence customers
 - Price competition may force commoditized solutions
 - Increased risk tolerance may enable rapid innovation

2. Observation: Aerospace Industry's customer base is expanding
 - These customers bring new expectations formed by exposure to other industries
 - New & existing customers are shaping each other's expectations – 3 trends



1) Decreased Cycle Times

- 10+ yr dev cycles not preferred
 - Expectation to prototype and iterate
 - Emphasis on “digital engineering” concepts
- Development separated from Integration
 - Internal investments in general purpose tech
 - Customer investments to adapt/modify
- COTS/GOTS back in vogue
 - Perceived to lower risk
 - Perceived to improve interoperability (next)

Top: Alexis Satellite
Middle: LIBS Backpack
Bottom: RAPTOR Telescope



2) Partial/Initial Deliveries

- Early fielding of prototypes
 - Expected to upgrade over time
 - Plan for versioning, esp. software-only
- Interoperability a focus
 - Early releases: interfaces, training, feedback
 - Partial solutions: work within tech ecosystem
- Acceptable terms are customer-specific
 - Rapid (acq, fielding)
 - Minimum Viable Product



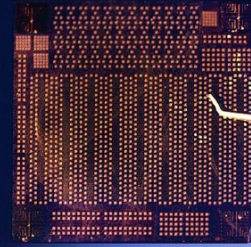
Top: LIDAR Demonstrator
Lower Left: Kiwi Nuclear Rocket
Lower Right: GBI Launch



3) Cybersecurity Principles

- Cybersecurity/IA becoming ubiquitous
 - Edge devices (e.g. SCADA)
 - Everything is networked – open architectures
- Still limited cyber expertise across industry
 - Approval process may be long, random
 - Cybersecurity baked in, not “bolted on”
- Threat perception is changing
 - Sophisticated teams, not amateurs
 - Vulnerability through partners

Top: Nanowire Development Tool
Middle: Trinity Supercomputer
Bottom: SuperCam Instrument



Take Aways

1. Changing Aerospace Industry customer expectations are disruptive
2. Customers are open to iteratively improving elements of their system
3. Customers expect to buy adaptation/modification, not innovation



USS Nevada after Crossroads Test